

THE OHIO JOURNAL OF SCIENCE

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No. 4

REPORT OF THE THIRTY-FIFTH ANNUAL MEETING OF THE OHIO ACADEMY OF SCIENCE

The Thirty-fifth Annual Meeting of the Ohio Academy of Science was held at the College of Wooster, Wooster, April 3 and 4, 1925, under the Presidency of Dr. Edgar N. Transeau. Something over one hundred members registered as in attendance; forty-six new members were elected, making a total membership at the close of the meeting of 396.

GENERAL PROGRAM.

FRIDAY, APRIL 3.

- 9:30 A. M.—Business Meeting.
- 10:30 A. M.—Reading of Papers in General Session.
- 1:30 P. M.—The Invitation Address by Prof. C. G. Williams, Director Ohio Agricultural Experiment Station, Wooster, on "The Work of the Ohio Agricultural Experiment Station."
- 2:30 P. M.—Reading of Papers in Sectional Meetings.
- 6:30 P. M.—Annual Banquet, Kenarden Lodge, followed by an address of welcome by President C. F. Wishart of The College of Wooster.
- 8:00 P. M.—Address by President Transeau, Taylor Hall, on "Accumulation of Energy by Plants."

SATURDAY, APRIL 4.

- 8:00 A. M.—Adjourned Business Meeting.
- 9:00 A. M.—Reading of Papers in General Session.
- 10:30 A. M.—Inspection of Orchards and Horticultural Work at The Ohio Agricultural Experiment Station under leadership of Vice-President Secrest.
- 11:00 A. M.—Reading of Papers in Zoology Section and in Joint Session of Geology and Physical Sciences Sections.
- 1:30 P. M.—Field Trip to Forest Arboretum on Grounds of The Ohio Agricultural Experiment Station under the leadership of Vice-President Secrest, Botany Section.

MINUTES OF BUSINESS MEETINGS.

The first business session was called to order by President Transeau at 9:50 A. M., on Friday, April 3, 1925, in the Auditorium of Taylor Hall. An adjourned session was held at the same place at 8:00 A. M. on the following day.

The President announced the appointment of the following committees for the meeting:

Committee on Membership—Geo. D. Hubbard, Chas. H. Otis, Clifford R. Cutright.

Committee on Resolutions—L. B. Walton, J. H. Schaffner, Carl Ver Steeg.

Committee on Necrology—F. O. Grover, John A. Bownocker.

The following *Auditing Committee* was elected by the Academy: Lynds Jones and S. R. Williams.

The following *Nominating Committee* was elected by the Academy by ballot: Raymond C. Osburn, J. Ernest Carman, E. L. Fullmer, Samuel W. Chase, F. C. Dockeray, L. W. Taylor.

Report of the Secretary.

The following report by the Secretary was received and ordered filed.

WOOSTER, O., April 3, 1925.

To the Ohio Academy of Science:

The duties of the Secretary were, as in past years, largely of a purely routine character. These were taken care of with the greatest possible dispatch. Among the transactions that seem to be of sufficient importance to warrant their review at this time may be mentioned the following:

Certificates of election to fellowship in the Academy were sent to all those thus honored at the Annual Meeting in 1924.

A brief report of the Thirty-fourth Annual Meeting of the Academy and a copy of the report of the Committee on Necrology were sent to *Science*; the former appeared in the issue of May 23, 1924, pages 470-472.

Information regarding the history and organization of the Ohio Academy of Science together with a copy of our Constitution and By-Laws was sent to applicants in two or three states where the organization of an academy was under consideration.

The following letter received by the Secretary speaks for itself:

TORONTO, SUNDAY, August 10, 1924.

DEAR MR. ALEXANDER:

I do not wish to let today pass without telling you how much I am enjoying my visit here and how heartily I appreciate having been sent by the Academy.

There are quite a number of Ohioans here, so one could not feel strange. But if there were none, the easy, informal way in which things are planned and carried out prevents any shyness or stiffness. To me the meetings seem better organized than our own just from that very standpoint—but this is merely a personal opinion.

Academy members who are here include R. C. Osburn, F. C. Blake, Alpheus Smith, A. P. Weiss, E. L. Rice and his father from Conn. Wesleyan, B. W. Wells, who is now in North Carolina but who still is a member of the Academy, Dr. Clare Martin of Bowling Green, and Albert Shadle. There may be others but I have not run into them.

The botanists' meetings have been splendid; a good many excursions are planned. I was much surprised when out of a clear sky my name was called to take part in the opening discussion on movement of food and water in plants. The president evidently remembered me from my visit to England in 1921.

Sincerely,

A. E. WALLER.

In August, 1924, the Academy received a formal invitation to be represented at the inauguration of Robert Ernest Vinson, President of Western Reserve University, on October 9, 1924. Thereupon the Secretary wrote to Dr. Dayton C. Miller, Case School of Applied Science, Cleveland, asking him to serve as the duly accredited delegate of the Academy and he very kindly consented to do so. Doctor Miller's report follows:

CLEVELAND, O., Oct. 24, 1924.

Mr. W. H. Alexander, Secretary,

The Ohio Academy of Science, Columbus, Ohio.

MY DEAR MR. ALEXANDER:

In accordance with your appointment of October 1, 1924, I attended the inauguration of Robert E. Vinson as President of Western Reserve University on October 9, 1924. I registered officially as the Representative of *The Ohio Academy of Science* and signed the formal register of delegates. I attended the ceremony of inauguration and the banquet in this capacity, and expressed the greetings of *The Ohio Academy of Science* to the officials of the University.

I am enclosing a printed program of the exercises in which you will find *The Ohio Academy of Science* listed as participating in the occasion. I am sure the University appreciated the kindness and interest *The Ohio Academy of Science* took in this connection. With kindest regards, I am,

Yours very truly,

DAYTON C. MILLER.

The copy of the program sent by Doctor Miller is on file with the Secretary.

The Secretary was present to represent the Academy in the Council of the American Association for the Advancement of Science at the Washington, D. C., meeting. While there, the Secretary together with the Treasurer, participated in a conference of representatives from the various state academies called by Dr. Burton E. Livingston, Permanent Secretary of the A. A. A. S., for the purpose of going over and thrashing out the whole question of affiliation between the Association and the academies. We understand the Treasurer is prepared to give the Academy a complete digest of this whole matter together with a statement of the final action taken by Council of the A. A. A. S.

In December last, we received a letter from Mr. Ovid M. Butler, the Executive Secretary of The American Forestry Association, Washington, D. C., earnestly soliciting the endorsement of this Academy in an effort to secure through appropriate legislation National forest lands in

the Eastern half of the country. This matter is now presented to the Academy for its action.

In the last few days we have received a communication from one B. E. Skvirsky who, presumably, is speaking for the "Russian Information Bureau" in Washington, D. C., which, in turn, "is acting as representative of the Joint Information Bureau of Moscow in its endeavors to bring about closer contact between scientists as well as scientific and cultural organizations of the Soviet Union and the other countries." The communication was acknowledged and is now before the Academy.

Attention is also called to the fact that the Geology Section of this Academy held its annual field meeting and excursion in Cleveland and vicinity on May 30, 31 and June 1, 1924, under the leadership of Prof. J. E. Hyde of Western Reserve University. The committee composed of Vice-President Conrey, J. E. Carman and J. E. Hyde, prepared a most attractive program for this annual affair but we have no further report of same.

WILLIAM H. ALEXANDER, *Secretary*.

Report of the Treasurer for the Year 1924-1925.

The following report by the Treasurer was received and referred to the Auditing Committee whose report is appended:

To the Ohio Academy of Science:

The Treasurer submits the following report for the period from April 2, 1924, to March 13, 1925:

RECEIPTS.

Cash balance on hand.....	\$ 554.73
Interest on certificate of deposit.....	39.00
Members dues paid through the A. A. A. S. and directly to the Treasurer.....	660.95

Total Receipts.....\$1,254.68

It is estimated that the library sales of publications will amount to \$37.00, but a statement from Miss McKee is not available at this time.

DISBURSEMENTS.

To E. L. Rice, traveling expenses.....	\$ 11.87
To Hotel Deshler, expenses for Dr. A. P. Mathews.....	12.00
To Wm. H. Alexander, honorarium.....	100.00
To A. E. Kraus.....	59.75
To B. E. Livingston.....	9.00
To B. E. Livingston.....	4.00
To A. E. Kraus.....	15.50
To A. E. Waller, traveling expenses to attend British Association meeting.....	23.05
To Helen Coleman, stenographic assistance.....	7.34
To B. E. Livingston.....	7.00
To Wm. H. Alexander, secretarial expenses.....	23.16
To Delores Dehus, initial fee in A. A. A. S. remitted.....	5.00
To Esther Bearss, initial fee in A. A. A. S. remitted.....	5.00
To Schuler P. Hall, initial fee in A. A. A. S. remitted.....	5.00
To Helen Coleman, stenographic assistance.....	6.00

Total disbursements.....\$293.67

Cash balance on hand March 13, 1925.....\$961.01

CURRENT LIABILITIES (Estimated)

To the Ohio Journal of Science for each member's Journal subscription, approximately 320.....	\$320.00
To honorarium for the Secretary, 1925.....	100.00
Printing and expenses of the 1925 meeting.....	100.00
Incidentals.....	40.00
Estimated total.....	\$560.00
Estimated surplus for current year.....	\$400.00

It is noted that the Academy will hereafter receive but half of the previous year's amount from the American Association. This will represent a loss of nearly one hundred dollars to the annual receipts. Since the Academy will send out its own statements there will be additional printing, postage and clerical assistance necessary.

It has been suggested that the Academy pay for a limited number of plates used in illustrating articles accepted by the editor for the Ohio Journal of Science. It has been expressed before in the Treasurer's reports that the Journal is the best place at our disposal for the expenditure of any small surplus the Academy may accumulate.

Respectfully submitted,

A. E. WALLER, *Treasurer.*

March 31, 1925.

Books, checks, vouchers submitted to the Auditing Committee and found to be correct.

LYNDS JONES,
S. R. WILLIAMS.

Report of the Executive Committee.

The following report of the Executive Committee was received and ordered filed:

WOOSTER, O., April 3, 1925.

To the Ohio Academy of Science:

A meeting of the Executive Committee was called by the President and was held at the Faculty Club Rooms, Ohio State University, Columbus, on December 20, 1924, with three members—Transeau, Waller and Alexander—present. Letters of regret were read from the other two members—Shatzner and Patten. President Transeau presided.

By unanimous vote it was decided to accept the invitation of the College of Wooster to hold the annual meeting for 1925 at Wooster, Ohio, and April 3 and 4 set for the meeting. The appointment of a local committee for the Wooster meeting was left to the President.

It was agreed that the preliminary announcements of the meeting should be issued not later than February 15 and that every effort should be made to obviate the conflict with the Educational Conferences held at the Ohio State University.

It was also agreed that in the event the Secretary was unable to attend the meetings of the A. A. A. S. at Washington, D. C., the latter

part of December, that the Treasurer, Dr. A. E. Waller, should be the representative of the Ohio Academy at a conference of representatives from the several state academies, called by Permanent Secretary Livingston, regarding the matter of affiliation.

It was further voted to recommend to the Academy the appointment of a permanent *Committee on Membership* at the Wooster meeting.

A second meeting of the committee was held last evening at Kenar-den Lodge, College of Wooster, Wooster, Ohio, with three members present—Transeau, Waller and Alexander.

At this meeting twenty-seven applications for membership in the Academy were approved subject to final ratification by the Academy.

Respectfully submitted,

WILLIAM H. ALEXANDER, *Secretary,*
For the Committee.

Report of the Publications Committee.

The following report of the Publications Committee was received and ordered filed:

WOOSTER, O., April 3, 1925.

To the Ohio Academy of Science:

The Annual Report of the Thirty-fourth Meeting, Proceedings, Vol. VII, Part 9, contained 39 pages and was published in September, 1924. The report minus the membership list was also published in the *Ohio Journal of Science*: 24: 209-229, 1924.

Respectfully submitted,

H. C. SAMPSON, *Chairman.*

Report of the Library Committee.

The following report of the Library Committee was not received in time to be presented to the Academy but is published for the information of the members:

COLUMBUS, O., April 8, 1925.

MY DEAR MR. ALEXANDER:

I regret very much that pressure of work kept me from submitting to the Ohio Academy of Science the report of the Library Committee in time for reading at the Wooster meeting. I am inclosing the report of Miss McKee of the University Library who has attended to the details of the work this year. I suppose it will be possible for you to include this material in the regular section of the minutes just as if it had been presented at the meeting itself.

MISS MCKEE'S REPORT.

The sale of publications for the year amounted to \$40.36, \$2.62 of which is still outstanding, \$37.74 having been turned over to the Treasurer of the Academy.

Late in December the Proceedings of the Thirty-fourth Annual Meeting were received from the printer and were mailed out in January to the members of the Academy and the exchange list.

Exchange publications received by the Academy have been filed in the Library, some additions having been made to the list this year and one or two that were interrupted by the European war have been revived recently.

ALICE D. McKEE.

Respectfully submitted,

C. W. REEDER, *Chairman*.

Report of the Trustees of the Research Fund.

The following report of the Trustees of the Research Fund was received and ordered filed:

COLUMBUS, O., April 1, 1925.

To the Ohio Academy of Science:

The accounts of the research fund which came into our hands at the close of the last meeting, proved upon reference to the bank deposits, to amount to the sum of \$1,324.82 as indicated in the Proceedings of the last annual meeting. \$1,300.00 of this amount was put into 7% bonds, leaving a cash balance of \$24.82. The addition of interest in November increased this to \$1,362.91. Accrued interest due May 1st, will bring this amount to \$1,407.41. There have been no bills submitted or paid which is in accordance with the instruction of the Academy, that the funds be conserved during the year and that the trustees recommend a plan of use for the fund in the future.

The question of how to best utilize the research fund, is a somewhat difficult one, but the trustees would suggest the following as a plan which may be subject to modification if the developments of the future indicate a better method.

We recommend that the income from \$1,000.00 of the research fund be available each year for a grant to be known as the McMillin grant and which may be used either for the assistance in some research problem or given as an award in recognition of some especially noteworthy contribution of some member of the Academy. That the balance of the fund and income derived from it, shall be used or allowed to accumulate as the trustees may deem best in any particular year, it being understood that the fund or any interest income shall in all cases be used for the encouragement of research either by grants for individual problems or for the publication of papers resulting from research.

Respectfully submitted,

EDWARD L. RICE,
GEO. D. HUBBARD,
HERBERT OSBORN, *Chairman*.

Report of the Committee on State Parks and Conservation.

The following report of the Committee on State Parks and Conservation was received and ordered filed:

WOOSTER, O., April 1, 1925.

To the Ohio Academy of Science:

It was impracticable to have a meeting of the full committee, but the chairman has requested members of the committee to send him suggestions or remarks concerning the possibilities of work in the committee and has had replies from several members with varied suggestions. It is hoped that the committee may have a meeting in the future and formulate some definite suggestions concerning the management of the State Forest Areas, the Forest Parks and the Game Refuges, which are now under control of state authorities, and we believe that these areas offer a very practical means of preserving the State fauna and flora, and that with the cordial support of the authorities in charge of them, it would be possible to adopt measures which will furnish the most desirable conditions for the use of the parks as well as for the preservation of the native fauna and flora.

The most recent advancement has been the acquisition of a number of tracts for state forests and I cannot do better than quote a statement from Professor Secrest, the State Forester, and a member of this committee, concerning the progress in this line:

"The state department of Forestry was given authority by statute in 1916, to acquire lands for state forest purposes. The price of such land cannot exceed \$10.00 per acre. In 1923 the state forest law was amended, permitting the Department to acquire 'areas of outstanding scenic value, virgin woodlands, and lands containing unusual flora.' In the purchase of such tracts the price is not limited by statute.

"From 1916 to 1921 it was difficult to secure funds for acquiring state forests. Increased appropriations from the Legislature were secured in 1921, and in 1923 were doubled, being \$100,000 for the biennium.

"To date six state forests have been acquired totaling approximately 14,420 acres. These tracts comprise the Dean State Forest of 1,500 acres in Lawrence County; Waterloo State Forest, of 221 acres in Athens County; Scioto County State Forest, 5,200 acres, in Scioto County; Scioto Trail State Forest, of 5,900 acres in Ross County; Pike County State Forest, 1,100 acres in Pike County; and Mt. Logan State Forest of 500 acres in Ross County (under lease from Federal Government.)

"The state forests are located for the most part on 'absolute forest land,' and the tracts are to be devoted not only to experiments and demonstrations in timber culture, but to park and recreation uses as well. The present areas are in some cases nuclei to be further extended in the future. This is particularly true of Dean, Pike, and Scioto Forests. Land can be purchased within the limit of \$10.00 per acre. The topography is rough, the soils thin, and the land largely stocked with second growth hardwood and pine forest. The open area is under 10%, and is in

most cases the typical abandoned fields, which when cultivation ceases are quick to revert to the typical Appalachian Plateau temporary forest types. About 300 acres of these old fields on the State Forests have been planted to a considerable variety of forest trees, which give promise for reforestation purposes. The forestry problems are largely those of protection against fires, and the management of the native forest stands. The State Forests are a delightful place for visitors who are interested in all forms of wild life, and the existing flora and fauna will be preserved and replenished by the protection now afforded these areas.

"The first forest parks were purchased in 1924. Logically enough the start was made in Hocking County where doubtless all will agree by and large Ohio's most outstanding, and interesting scenic areas exist. This is known as the 'cave region.' Not only is the geology most interesting, but the flora is decidedly varied, unique, and interesting. The gorges contain immense specimens of the original virgin woodland—hemlocks, tulip trees, oaks, maples, three species of birch, and a wealth of wild flowers.

"The well known Rock House, The Gulf or Old Man's Cave, and Kunkle's Hollow are now in possession of the State. An option has been secured on Ash Cave, and it can soon be taken over. Other interesting places in this region are contemplated for purchase.

"Other forest parks are under consideration in different parts of Ohio.

"The Parks will be open to the public under rules and regulations free of charge and arrangements will be made to provide accessibility and comfort to a degree that will satisfy those who love the outdoors, and nature's handiwork. The old fields in connection with the Parks, will be planted to trees so that the greatest usefulness will obtain.

"The State Forests and Forest Parks either purchased or under option now number 12, and total approximately 16,500 acres. The number and total area will be increased by July 1st with funds now available."

Professor Fullmer reports that there have been additions to the Cleveland Metropolitan Park System, which now consists of some 4,500 acres, and that "this is being added to from time to time and the opening of roads into some of the tracts has made them more available. It is planned to make a lake of some 100 acres on this portion of the tract near Whips's ledge. This tract lying about 15 miles south of the city in Medina County, has been enlarged by a gift since we visited it two years ago."

Professor Shatzer states that there is opportunity for the development of several miles of River Area Park in the vicinity of Springfield and that it is hoped this tract may be utilized.

The additions to the game refuges which are under the supervision of the Fish and Game Commission have not been reported recently, but while these do not give as permanent a guarantee of preservation as the State forests, they undoubtedly will serve a very valuable purpose, and the refuges which are permanent State property are being so administered that we believe they will prove of much value as biological centers.

The chairman of this committee visited the Royal Palm State Park of Florida last week and was much interested in learning as to its management. It is managed by the State Federation of Women's Clubs under authority of the State and maintains a lodge and provides picnic grounds for tourists, but with scrupulous care to preserve the natural conditions of a very unusual tract of biologic interest.

Respectfully submitted,

HERBERT OSBORN, *Chairman.*

Report of the Committee on Legislation.

WOOSTER, O., April 3, 1925.

To the Ohio Academy of Science:

Unfortunately the members of this committee are rather widely scattered over the State and it has been, therefore, practically impossible to get a quorum present for a formal meeting. A meeting was called for January 10, 1925, but a quorum did not appear. Thereupon the chairman of the committee called together a number of the members of the Academy living in Columbus and vicinity. At this conference were President Transeau, Professors Herbert Osborn, F. H. Krecker, and C. W. Reeder, and the chairman.

The only matter considered at this informal meeting was whether or not an attempt should be made to get a bill through the 86th General Assembly, and if so, in what form. It was agreed that we should make the effort and the following draft was worked out and submitted to the members of the committee:

H. B. No. 123.

A BILL

RELATIVE TO STATE RECOGNITION OF THE OHIO ACADEMY OF SCIENCE.

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1. The Ohio Academy of Science, a corporation not for profit, incorporated under the laws of Ohio, March 12, 1892, shall be under the control of a board of trustees consisting of fifteen members to serve without salary or per diem. Six of the members of the board shall be appointed by the governor with the advice and consent of the Senate, two to serve for two years, two to serve for four years and two to serve for six years, and until their successors are appointed and qualified, and thereafter two members shall be appointed every two years to serve for a term of six years. The remaining nine members of the board shall be elected by the members of the Academy.

SEC. 2. On and after the taking effect of this act, the Ohio Academy of Science shall constitute an official source of advice and information on all scientific questions within its field submitted to it by any state department or officer thereof. The services of the Academy shall be available to the state or any of its officers in any matter within its field in which the consideration of scientific facts or policies may be involved, and the officers of the state may call upon the Academy of Science, through its properly elected officers or committees appointed by its officers, for such consultation and advice as may be of service to them in their duties. The members of such committees shall receive no compensation for their services, except that all traveling, clerical and other necessary expenses shall be paid. No member of the Ohio Academy of Science, while serving on any such committee, shall be eligible for expert service under advice from said committee for which compensation from the state is received.

SEC. 3. The Ohio Academy of Science may issue from time to time publications dealing with the results of scientific investigations. Through such agency or agencies as the board of trustees may designate, said publications shall be made available by distribution, exchange, or sale, to the citizens of Ohio, scientific workers and scientific societies.

SEC. 4. The board of trustees shall submit biennially, to the director of finance, a budget covering the necessary expenses to be incurred in carrying out the provisions of this act, and the general assembly shall make such appropriations as it may deem advisable.

It was further agreed that in as much as Mr. E. J. Riggs of Gallia County introduced a similar bill at our request in the 85th Assembly (H. B. No. 400) he be asked to introduce the bill in the 86th Assembly. This he very kindly consented to do and the bill was introduced as drafted and became known as H. B. No. 123. It was referred to the Finance Committee and after considerable delay the committee gave us a hearing on the Bill. At this hearing appeared on behalf of the Academy, President Transeau, Mr. Arthur Harper, Mr. E. S. Thomas, Dr. R. C. Osburn and the Secretary. The hearing was respectful but purely perfunctory, as it was clearly evident that the Finance Committee had already closed the door against the Bill. The adverse decision of the committee announced a few days later was not a surprise.

The committee is of the opinion that if the Academy is to continue its efforts along this line—and it so recommends—and hopes to get results, it will be necessary for the Academy to resolve itself into a "committee of the whole" and make a united effort to interest the members of the Assembly through the "folks at home."

W. H. ALEXANDER *Chairman*,
EDWARD L. RICE,
L. B. WALTON.

Election of Officers and Committeemen.

The following officers and committeemen were duly elected by vote of the Academy upon the recommendation of the Nominating Committee:

President—Paul M. Rea, Cleveland Museum of Natural History, Cleveland.

Vice-Presidents:

Zoology—Clarence H. Kennedy, Ohio State University, Columbus.

Botany—W. Garfield Stover, Ohio State University, Columbus.

Geology—W. H. Shideler, Miami University, Oxford.

Psychology—Harold E. Burt, Ohio State University, Columbus.

Medical Sciences—Dr. Samuel W. Chase, Cleveland.

Physical Sciences—Robert C. Gowdy, University of Cincinnati, Cincinnati.

Secretary—William H. Alexander, U. S. Weather Bureau, Columbus.

Treasurer—A. E. Waller, Ohio State University, Columbus.

Elective Members of Executive Committee—Lewis G. Westgate, Delaware; and M. E. Stickney, Granville.

Publication Committee—Henry C. Beardslee, Perry.

Trustee Research Fund—Geo. D. Hubbard, Oberlin.

Member Library Committee—E. L. Moseley, Bowling Green.

Committee on Legislation—Wm. H. Alexander, Columbus; M. M. Metcalf, Baltimore, Md.; Paul M. Rea, Cleveland; Edw. L. Rice, Delaware; L. B. Walton, Gambier.

Representatives on the Editorial Board of Ohio Journal of Science:

Zoology—R. A. Budington, Oberlin College, Oberlin.

Botany—Bruce Fink, Miami University, Oxford.

Geology—Wilber E. Stout, Ohio State University, Columbus.

Psychology—Erwin A. Esper, Ohio State University, Columbus.

Medical Sciences—F. C. Waite, Western Reserve University, Cleveland.

Physical Sciences—(Vacant).

Election of Members.

The following persons were regularly nominated and elected to membership in the Academy:

BLAYDES, GLENN W.; Botany; 95 Oak Hill Ave., Delaware.

BOGNAR, E. J.; Geology; 1125 S. Seneca, Alliance.

BROWN, WALTER B.; Zoology, Anatomy, Physiology; Granville.

BUSHNELL, JOHN; Botany; Ohio Agr. Exp. Station, Wooster.

CAMPBELL, ROBERT J.; Botany, Entomology; O. S. U., Columbus.

CHASE, JOHN H.; Geology, Biology; 69 Benita Ave., Youngstown.

CHERRY, HELEN; Bacteriology, Geology; R. F. D. 1, Bellwood, Pa.

CLARKE, LEOTA B.; Chemistry; 3103 12th St. N. W., Canton.

COPP, PAUL T.; Mathematics; 233 Hartshorn St., Alliance.

CUTRIGHT, CLIFFORD R.; Zoology, Entomology; Ohio Agr. Exp. Sta., Wooster.

DIKE, CLYDE E.; Botany; Ohio Agr. Exp. Sta., Wooster.

DILLER, JESSE D.; Botany; 1501 Neil Ave., Columbus.

DUNN, PAUL H.; Geology; Miami University, Oxford.

FRYE, WALTER; Geology; 209 Grand Ave., Akron.

GRADY, ROY I.; Physical Sciences; 722 N. Bever St., Wooster.

HAY, LLOYD Q.; Biology, Physiology; North Industry.

HERSH, A. H.; Zoology; Adelbert College, W. R. U., Cleveland.

HOWE, C. E.; Physical Sciences; 189 E. College St., Oberlin.

HOWLETT, FREEMAN S.; Horticulture; Ohio Agr. Exp. Sta.; Wooster.

KUEGLE, PAUL C.; Geology; R. F. D. 4, Loveland Road, Youngstown.

LORD, RICHARD C.; Physical Sciences (Chemistry); Gambier.

MILEY, HUGH H.; Zoology; Miami University; Oxford.

MORGAN, MARY S.; Forestry, Psychology; Astronomy; Girrard.

NELSEN, OLIN E.; Microscopic Anatomy, Physiology; 335 Field Avenue, Toledo.

PALMER, MARY C.; Biology, Nature Study; R. F. D. 2, 760 Midlothian Road, Youngstown.

POOS, F. W.; Entomology; Box 283; Sandusky.

PRICE, JOHN W.; Zoology; Pataskala.

- ROTH, CONRAD; Birds, Wild Flowers, Forestry; 1715 Robinson Ave., Portsmouth.
- ROWLES, EMMETT; Zoology, Medical Sciences; 97 Franklin Ave., Athens.
- SCOTT, JOSEPH M.; Bacteriology, Animal Parasitology; 141 Simpson St., Alliance.
- SCOTT, LUTHER C.; Geology; Toledo University, Toledo.
- SPENCER, WARREN P.; Zoology; 138 N. Walnut; Wooster.
- STEELE, MIDA L.; Botany; R. F. D., 1, Creston.
- STEWART, GRACE A.; Geology; O. S. U., Columbus.
- STINCHCOMB, G. A.; Physical Sciences; 138 Greenfield St., Tiffin.
- SWENSON, ENGELBREKT Å.; Physiology, Anatomy; W. R. U., Cleveland
- TAYLOR, L. W.; Physical Sciences; 30 N. Pleasant St.; Oberlin.
- TERWILLIGER, CHAS. VAN ORDEN; Physical Sciences; O. S. U., Columbus.
- THIESSEN, NORMA W.; Chemistry, Biology; 1491 Lakeland Ave., Lakewood.
- THOMPSON, OSCAR E.; Zoology, Botany; 42 Rice St., Alliance.
- TRIESCHMANN, JACOB E.; Physical Sciences (Chemistry); 28 W. Davis St., Tiffin.
- WATSON, S. A.; Biology; Wilmington College, Wilmington.
- WESTHAFFER, W. R.; _____; College of Wooster, Wooster.
- WIEBE, ABRAHAM H.; Biology; Bluffton.
- WILCOX, R. B.; Botany; Wooster.
- WILLIAMS, C. G.; Physical Sciences; Ohio Agr. Exp. Station, Wooster.

Report of the Committee on the Election of Fellows.

WOOSTER, O., April 3, 1925.

To the Ohio Academy of Science:

A meeting of the Committee on the Election of Fellows was held last evening at Kenarden Lodge, College of Wooster, Wooster, Ohio. Six members of the committee were present and the other members were represented by proxy.

Of the candidates considered, two received the necessary nine favorable votes and were declared elected. The fellows elected will be personally notified, and the list will be published in the Proceedings of this meeting.

Respectfully submitted,

WILLIAM H. ALEXANDER, *Secretary,*
For the Committee.

The following is a list of those elected Fellows:

HENRY CURTIS BEARDSLEE
JOSEPH H. TODD

The following Special Report on the Relations between the American Association for the Advancement of Science and The Ohio Academy of Science was received and ordered filed:

WOOSTER, O., April 2, 1925.

To the Ohio Academy of Science:

The plans for affiliation between the American Association and the various state academies were made the subject of action at the St. Louis meeting of the Association in 1919. In January of 1920 your Treasurer was asked to inquire of Doctor L. O. Howard the results of this action and received the following reply:

"Yours of the 6th has come. I find that your understanding of the affiliation matter is correct and corresponds with the action of the Council at St. Louis, with the exception of No. 1. Following is a transcript from the minutes of the Council meeting of December 29th:

"The Committee on Affiliation of State and Local Academies reported the following recommendations:

- "1. That State academies be affiliated on a financial basis that will yield the Association four dollars net per member.
- "2. Any State academy which concludes arrangements for affiliation within the first six months of 1920 may be accepted for the entire year 1920, fees paid to the Association before that date to be adjusted in accordance with the detailed plan.
- "3. Two alternative plans are considered with respect to membership in the academies, namely (a) All members of the academy to affiliate with the Association; (b) To establish two grades of membership, of which one will be national, involving membership in both academy and Association; the other local, consisting of academy membership only.
- "4. The academies will collect joint dues and transmit the Association's share to the Treasurer.

"Voted that the report of the Committee on Affiliation of State and Local Academies be received and approved.

"Your No. 4 is all right. The collection of four dollars instead of three by the Association is necessitated by the new arrangement by which the Association pays the journal *Science* three dollars for each new member. You see we must have something for overhead expense."

It is clear from this letter that our Academy was not altering its dues, but that the Association was to receive one dollar less for the subscription to "*Science*" from all of its affiliated State Academy members. That this is plainly understood as the basis of the financial arrangement is still further brought out in a letter dated May 21 from Dr. B. E. Livingston, who succeeded Dr. Howard as Permanent Secretary of the Association:

"Replying to your several letters, your ideas about the nature of the affiliation between the Ohio Academy of Science and the American Association for the Advancement of Science are quite right. I think I have everything clear now.

We refund \$1 for each member of the Academy who has paid \$5 dues to the American Association for 1920. For each new member you are to send this office \$4, together with his name and address and a statement of which journal he prefers. The journal will be ordered as soon as the remittance and data are at hand. Since back issues of the journals are limited, prompt action is necessary. Also, of course a new member would like to have his journal begin promptly. I suggest that you send me new members' names and remittance for them so that they will reach here on Wednesday of each week. We send our list to *Science* every Friday.

"I want to ask you if you can follow this scheme for collecting dues next October. We will have a special statement card prepared for Academies. On its front will be a statement of the affiliation and blank spaces for imprinting the Academy name and the bill for 1921 dues. On the back will be blanks to be filled in by members, for information for this office and for Membership List, A. A. A. S. We will put the name and address of member on front of card and send all cards to you. We will also supply window envelopes for you to mail cards out in. You are to send these out about September 25 or so and they are to come back to you, with members' remittances. You are to send the cards to this office with \$4 for each one. This scheme will get your members on cards here which are just like the cards of our other members. I hope you will fall into this idea, for it is essential that we have the same system for all our members. A new membership list is being prepared and it is necessary that we have all the information about all members promptly after October 1."

It was not only clear from this that the Association was expecting to reduce the joint dues of members of both organizations, but also they were going to help in obtaining an increasing membership in the Academies.

After a year of this, however, the cost to the Association of remitting one dollar to each of its members who was also a member of a state Academy was greater than at first anticipated. In the correspondence of that period with Dr. Livingston, this amount lost to the Association by its voluntary relinquishment of one dollar of the price of the subscription to "Science" came to be regarded as money needlessly turned back to the individuals from whom it had been collected. From the point of view of State Academies which do not publish Journals or Proceedings of a scientific nature and whose membership fee had always been lower than ours in the Ohio Academy it was a clear gain of a dollar per member. Dr. Livingston wishing to call attention to what was undoubtedly great financial assistance to these Academies gave a name to the remitted funds and called them "*Grants of the Association to the Academies.*" It must be remembered however that in our Academy we had not changed our dues or our Journal costs. To us it was simply the arrangement originally proposed in the St. Louis meeting of the Association, namely—a reduction in the cost of *Science*. We did not see any reason for charging more for the *Ohio Journal of Science* for the members of the Association than for the Academy members who were not also Association members, and we simply returned the money to the former. Personally speaking I did not think that a mistake at the beginning of our affiliation and I do not think it a mistake now.

Correspondence was often voluminous over the manner of payments of the members and the affiliation arrangement for the past five years has been purely a financial arrangement from which no scientific benefits have accrued. As there were new plans evolved they would often come as "instructions" from the Association office. There was no way of obtaining a list from the Association of its members who were desirable from the standpoint of their attainments and residence in the State as prospective members of the Academy. We furnished the Association each year with the lists of our members. In 1923 the increases in enrollment in the Association through direct recommendation of the Treasurer were counted as seventeen. No account was taken at that time of the

total increases in Ohio. This was putting the increases in membership in an unfair light as undoubtedly the Academy members many of whom are science teachers and research students were largely responsible for these new memberships in the Association.

The Association after two years of having dues collected by the Treasurer in each of the affiliated Academies decided to collect its own dues. This seemed to your Treasurer psychologically unsound, as it meant that two bills in place of one must be collected from each member. The following paragraph is taken from a letter to Dr. Livingston written by the Treasurer under date of March 8, 1923:

"Your letter of February 23d which should have been sent to me was forwarded by Dr. Rice and reached me yesterday. You are doing the Ohio Academy of Science a great injustice in supposing that only seventeen new members were received through the Academy for the A. A. S. Our lists are not worth checking over on this point, but I know more than seventeen members have been added. You are doing the Academy a serious injury in changing the billing of the A. A. S. members from the office here to the Washington office because the members have just been trained to send the money here. Now your order (for that strong word is just about what it amounts to) comes, to abandon this system and substitute the collection directly through your office. Certainly the Academy can not be supposed to have been glad to collect the money for you in the first place. They did it simply as an accommodation and in the matter of the affiliation it seemed as though it would be an easy way of completing the arrangement."

With all of this there was still nothing but a financial arrangement and there was no scientific advance. There was further an annoying distinction made between the affiliated academies and the affiliated Societies which was also on a financial basis, namely that a five dollar initial fee was remitted if the new member was also a member of an affiliated Society. It was in consequence difficult to find out exactly what a new member should pay.

Passing over the correspondence of the next year, we wish to note the work of Professor Osborn in attempting to raise the level of the basis of affiliation from an exchange of checks to the point where scientific work might be benefited. A paragraph from a letter of Dr. Transeau to Dr. Livingston under date of December 8, 1924, will serve:

"In view of the difficulties attending the collection and distribution of the dues, and the apparent change in point of view of the American Association indicated by a comparison of your letter with that of Dr. Howard, I would suggest that the proposal made by Professor Herbert Osborn might meet the situation. As I understand his scheme, it is that the dues be collected as before the affiliation, and that the Association actually subsidize the academies according to their membership, \$25 for those having one hundred members or less, \$50 for those having between one and two hundred members, and \$100 for those having 300 or more members. These amounts would be credited to the Academy as a whole and would not be rebated to members. In this way the affiliation would not be weakened and the Association would not be called upon for any large contribution to the Academies."

This letter was written shortly before the Washington meeting of the Association. Through the Association's committee on State Academies and the letters from the affiliated academies registering protests to the secretary there was at the last meeting an attempt to come to an understanding and to bring our affiliation to a reasonable arrangement,

namely, to cost the Association less, but to derive more of scientific benefits from the work of the scientific men of the country. The Association has spent more money than it feels it should by reducing the price of *Science* to Academy members and is proposing a new and less expensive arrangement. It is contained in the following paragraphs:

(10) The Council adopted the following resolutions concerning the future of arrangements with affiliated academies of science and local branches:

(a) In view of the rapid increase in the number of members concerned, it has become impossible to continue the annual grants to affiliated academies and local branches as in the past, and the association consequently finds it necessary to reduce the allowances for these organizations, for 1926 and until further notice, to one-half of the present amount per member. This reduction is to go into effect October 1, 1925.

(b) All members of any affiliated academy are to be at all times, until further notice, eligible to admission to the association on certification by the proper academy officer and without payment of the usual entrance fee.

(c) The permanent secretary is instructed to take up the applications for academy affiliations according to the modified arrangements for academy affiliation now authorized.

5. Since the academy allowance from the Association is now to be but 50 cents per year per member, it seems desirable that the affiliated academies should collect full academy dues from their association members. It is hoped that those academies that have heretofore credited association allowances as academy dues will arrange this matter this spring, so that there may be no misunderstanding on the part of their members next fall when the new rule is to go into effect. It may be desirable for the proper academy officer to send to all association members of his academy an announcement on this subject, either before or at the time of sending out the bills for annual dues. The facilities of the permanent secretary's office are offered to the affiliated academies in this and similar kinds of circularization; multigraphing, mimeographing or printing circulars or letters and the addressing of envelopes for academy work can be cared for at the Washington office at actual cost or less, if the academy so desires. The general facilities of the office are to be at the service of the affiliated academies, with probably some saving in cost.

Since the arrangement between the American Association and the Academy has been largely a financial one, your Treasurer has cared for most of the correspondence. The Association promises for the future that the affiliation will have less of a financial and more of a scientific conscience. The association therefore asks the appointment of a representative from each of the State Academies. This is expressed in the recent communication under date of March 21, 1925, as follows:

REPRESENTATION OF AFFILIATED ACADEMIES IN THE ASSOCIATION.

D. Each affiliated academy is to have, as heretofore, a representative in the council of the Association, thus taking part in the direction of association affairs.

It is hoped that the academy representatives will be named as early in the year as possible, so as to be listed in the permanent secretary's files. If an academy representative is to be unable to attend an annual meeting of the Association another may at any time be named to take his place. In general, an academy representative will be considered as remaining in office until his successor is officially named to the permanent secretary's office.

It is suggested to the Ohio Academy that this representative be appointed as heretofore by the executive committee.

It cannot be denied that the Association has maintained a vacillating policy toward the State Academies. That this probably will continue is to be seen in the following paragraphs from the communications of March 21 from Dr. Livingston (*italics inserted by the Treasurer*).

G. *Term of these arrangements.*

"It is understood that those arrangements of academy affiliation are not to be considered as in any way binding on the Association beyond the actual statements here made. The arrangements here described are to go into effect October 1, 1925, and are to be continued until further action by the council of the Association. Modifications may be made from year to year and the nature of such modifications will doubtless be determined by the degree of success with which the purposes of the affiliation are fulfilled. It is understood, however, that no changes in the financial or membership aspect of these arrangements will be placed in operation without at least a six-months' preliminary notice to the academies. An academy may withdraw from the affiliation on six months' notice.

"*It is to be hoped that the affiliated academies will continue to increase in strength and that the time may soon come when they will not need to accept financial grants from the Association.* It is to be remembered that the source of academy allowances is solely the association membership dues paid by members and that there are before the Association many projects for advancing American science that will require funds from this source. If any affiliated academy may find it possible to remit its annual association grant such action will be greatly appreciated by the latter, the funds thus freed will be utilized to advance science in other ways, and the non-financial aspects of the affiliation may be strengthened by such remission of grants.

"The officers and representatives of the affiliated academies are invited to make further suggestions for improving the association-academy relations, and to inform the permanent secretary as to their approval or disapproval of the paragraphs of this memorandum, or as to their suggestions regarding the improvement."

A. E. WALLER, *Treasurer.*

April 2, 1925.

Following the reading of the above report, there was considerable discussion, pro et con, relative to the advisability of continuing the affiliation between the Ohio Academy of Science and the A. A. A. S. Finally, upon motion of L. B. Walton, seconded by R. V. Bangham, the matter was referred to the Executive Committee with power.

Report of the Committee on Resolutions.

The following resolutions were submitted by the Committee and unanimously adopted by the Academy:

1. The Ohio Academy of Science wishes to express its appreciation to *The College of Wooster*, The Ohio Agricultural Experiment Station and the unusually efficient local Committee, for making this, the Thirty-fifth Annual Meeting one of the most successful as well as enjoyable the Academy has held.
2. The Academy furthermore desires to extend to the representatives of the Press its cordial appreciation of the space given in the papers to the program and to the results accomplished by the members of this Academy.
3. The Ohio Academy of Science in session at Wooster, Ohio, wishes to place itself on record as deploring the recent action of the Governor and the Legislature of the State of Tennessee in connection with their recent enactments relative to natural phenomena. The publicity thus developed will prove disadvantageous to the best interests of the State.
4. The Ohio Academy of Science assembled at Wooster, Ohio, wishes to express its sympathy to the teachers of science in Tennessee in connection with the handicaps under which they have been placed in teaching the truths of nature.

L. B. WALTON,
J. H. SCHAFFNER,
CARL VER STEEG,
Committee.

Report of the Committee on Necrology.

The Committee on Necrology records the loss by death during the year of four members, *viz.*:

- Charles W. Napper, Greenfield;
- Prof. A. D. Selby, Ohio Agricultural College, Wooster;
- Prof. Septimus Sisson, Ohio State University, Columbus;
- Prof. Herrick E. Wilson, Oberlin College, Oberlin.

Scientific Sessions.

The following is the complete scientific program of the meeting:

PRESIDENTIAL ADDRESS.	
Accumulation of energy by plants.....	EDGAR N. TRANSEAU
PUBLIC LECTURE	
The work of the Ohio Agricultural Experiment Station.....	C. G. WILLIAMS
PAPERS	
1. Orchard Spraying and Human Health. (10 min.).....	J. S. HOUSER
2. Local Lists of Plants and Animals. (20 min.).....	LYNDS JONES
3. Modern Ideas of Soil Development. (20 min.).....	G. W. CONREY
4. Entomological Conditions in Cuba. (20 min.).....	HERBERT OSBORN
5. A Biological Basis of Learning. (20 min.).....	H. M. JOHNSON

6. Daily Life of the American Eagle; Early Phase (30 min.) (lantern).....
FRANCIS H. HERRICK
7. Relation of Temperature and Rainfall to Hessian Fly Development.
(15 min.) (lantern).....H. A. GOSSARD
8. Seiches in Lake Erie and Their Ecological Significance. (20 min.)
(lantern).....FREDERICK H. KRECKER
9. Repeated Rejuvenations in Hemp. (12 min.).....JOHN H. SCHAFFNER
10. The Dynamic Factor in Heredity. (12 min.).....A. B. PLOWMAN
11. Monocular and Binocular Vision. (15 min.).....PRENTICE REEVES
12. A Theory of Nerve Conduction and Its Application to Imagination and
Habit. (15 min.).....N. M. JOHNSON
13. Intra-relationships of Echinoderms as Evidenced by Ciliation. (10 min.)
(lantern).....R. A. BUDINGTON
14. The Relation of the Respiratory Exchange to Differentiation and Dedif-
ferentiation in Obelia Sp. (10 min.).....EMMETT ROWLES
15. The Sexual Structures of Polydesmus Serratus. (10 min.).....STEPHEN R. WILLIAMS
16. The Development of the Male Gonopods in Euryurus Erythropygus,
Brandt; a Polydesmid Millipede. (10 min.).....HUGH H. MILEY
17. On the Structure of a Trematode of the Genus Eumegaceste Found in the
Cloaca of the Common Tern at Put-in-Bay in 1924. (10 min.).....
JOSEPH N. MILLER
(Introduced by Prof. F. H. Krecker)
18. The Correlation of the Seasonal History of the European Corn Borer with
Seasonal Planting of Corn. (5 min.) (lantern).....L. L. HUBER
19. Aphids New to Ohio. (By title).....C. C. CUTRIGHT
20. Some Reactions of Pemphigus Sp. (5 min.) (lantern).....C. C. CUTRIGHT
21. Exact Determination of Food Requirements in Bringing Insects to
Maturity. (10 min.).....E. R. BRYANT
22. On the Anatomy of the Head and Thorax in Ranatra (Heteroptera). (10 min.)
(lantern).....C. R. NEISWANDER
23. The Evolution of Insects Based on a Study of the Appendages. (10 min.)
L. B. WALTON
24. A Biological Record and Classification Card. (5 min.).....L. B. WALTON
25. The Calorigenic Effect of Adrenalin. (15 min.).....M. W. CASKEY
26. Some Observations on the Architecture of the Spongiosa of the Calcaneus.
(15 min.) (lantern) (See demonstration No. 1).....SAMUEL W. CHASE
27. Rickets and Osteoporosis in Swine as Affected by Nutrition. Dietary
Factors. (15 min.) (lantern).....G. BOHSTEDT
28. Rickets and Osteoporosis in Swine as Affected by Nutrition. Pathology.
(15 min.) (lantern).....B. H. EDGINGTON
29. The Effect of Light on Calcification of Bone. (15 min.) (lantern).....
R. M. BETHKE
30. Some Preliminary Notes on the Plankton of the Kartabo Region, British
Guiana. (10 min.) (lantern).....HUGH M. RAUP
31. Some Factors Which Determine the Size of the Eye of Drosophila.
(15 min.).....A. H. HERSH
32. A Note on Wing Venation in Certain Diptera. (5 min.) (lantern).....JAMES S. HINE
33. Experiences and Experiments in Teaching Embryology. (10 min.).....
BRADLEY M. PATTEN
34. The Fauna of a Limestone Spring in Cliff Park, Springfield, Ohio. (10 min.)
(lantern).....HUGH M. RAUP
35. The Relative Values of Morphological Adaptations. (10 min.).....
CLARENCE H. KENNEDY
36. Relation of Temperature to the Physiology of the Potato Plant. (15 min.)
JOHN BUSHNELL
37. Some Abnormalities in Mniium. (10 min.).....CHAS. H. OTIS
38. Certain Aspects of the Chemical Composition of the Apple Flower. (12
min.).....FREEMAN S. HOWLETT
39. Lodging in Oats and Wheat. (15 min.).....F. A. WELTON
40. Variations in American Crab Apple (*Malus Glaucescens*, Rehder).
(5 min.).....E. L. FULLMER

41. Some Factors Influencing the Development of *Venturia Inequalis*. (10 min.).....H. C. YOUNG
42. Degeneration of Potatoes in Ohio. (15 min.) (lantern).....PAUL E. TILFORD
43. Effects of Lightning on the Trunk of *Platanus Occidentalis*. (5 min.)....
JOHN H. SCHAFFNER
44. The Microchemistry of Flax Fiber Formation. (10 min.) (lantern).....
DONALD B. ANDERSON
45. Some Fresh Water Algae from Fukien, China. (5 min.).....L. H. TIFFANY
46. Pre-Staining in Histological Technique. (10 min.).....CHAS. H. OTIS
47. The Seasonal Development of Apple Scab in Central Ohio in 1924. (10 min.) (lantern).....H. W. JOHNSON
48. The Genus *Oedogonium*. (15 min.).....L. H. TIFFANY
49. Experiments on the Control of Apple Scab in Central Ohio in 1924. (10 min.) (lantern).....W. G. STOVER and H. W. JOHNSON
50. Some Mississippian Physiography of Northeastern Ohio. (25 min.).....
G. F. LAMB
51. Peneplains and Straths in Southern Ohio. (15 min.).....WILBUR STOUT
52. Peneplains in Muskingum County, Ohio. (10 min.).....G. W. CONREY
53. The Uplands of Jefferson County, Ohio. (5 min.).....R. E. LAMBORN
54. A Method of Estimating Post-Glacial Time. (10 min.) (lantern).....
ALLYN C. SWINNERTON
55. Geologic Structures in Southern Vermont. (15 min.).....GEO. D. HUBBARD
56. Limestone Caves in Ohio (10 min.).....GEO. W. WHITE
57. The Areas of Distribution of Paleozoic Seas in the Arctic Regions of North America, Europe and Asia, in Connection with the Problem of Circumpolar Seas. (15 min.).....AUG. F. FOERSTE
58. Difference in Niagaran Faunas Due to Development in Distinct Arms of the Sea, in Connection with the Cincinnati, Kankakee, LaSalle and Other Anticlines. (15 min.).....AUG. F. FOERSTE
59. A Drag Fault. (8 min.).....G. F. LAMB
60. Some Recent Deep Wells in Ohio. (15 min.).....J. A. BOWNOCKER
61. Dip and Expansion of Deep-seated Rocks in Eastern Ohio. (10 min.)....
WILBUR STOUT
62. The Members of the Monroe and their Distribution in Ohio. (15 min.)...
J. ERNEST CARMAN
63. Some Striking Features of the Lower Mercer Limestone in Mahoning County (8 min.) (Introduced by Prof. G. F. Lamb).....EDWIN J. BOGNAR
64. A Suggestion in Teaching Economic Geology. (5 min.).....GEO. D. HUBBARD
65. The Scrub Grass Coal in Ohio. (10 min.).....WILBUR STOUT
66. The Laws of Motion Under Constant Power (10 min.) (lantern) L. W. TAYLOR
67. A Precision Determination of the Acceleration of Gravity. (10 min.) (lantern).....H. HUGH WILLIS
68. A Quantitative Measurement of the Change in Intensity in Radio Signals During the Transition from Daylight to Dark. (15 min.) (lantern)....
C. E. HOWE

DEMONSTRATIONS

1. Specimens to Illustrate Paper No. 26SAMUEL W. CHASE
2. Grey Squirrel Killed by Excessive Growth of Incisor Teeth.....E. W. SCHEAR
3. Drawings of Forster's Types of Odonata.....CLARENCE H. KENNEDY
4. Iron Bacteria from Yellow Springs, Ohio..A. C. SWINNERTON and O. L. INMAN
5. The Mateer Embryo. Presomite Human Embryo-Twin. (Slides and Models).....H. N. MATEER
6. One Cause of the Failure of Canada Thistles to Produce Seeds..FRED A. DETMERS
7. Progress of the Common Barberry Eradication Campaign, 1918-1924.
JOHN W. BARINGER
8. Slides Showing Musculature of Appendages in Hexapoda.....L. B. WALTON
9. Biological Record Cards.....L. B. WALTON